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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/752,642	01/07/2004	Naofumi Nakamura	790001-2042	4109

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EXAMINER

FENTY, JESSE A

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 11/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/752,642

Applicant(s)

NAKAMURA ET AL.

Examiner

Jesse A. Fenty

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-10, 13 and 14 is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 6, 11 and 12 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 3, 5, 6, 11 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Iwasaki et al. (US 2002/0167091 A1).

In re claim 1, Iwasaki (e.g., Fig. 1) discloses a semiconductor device, comprising:

at least two wiring layers (19, 15);

a via contact (17) formed between the at least two layers and made of a metal wiring material (aluminum plus copper) which is the same as that of the at least two wiring layers,

wherein the metal wiring material of the via contact contains an additive (copper and nickel or silicon – page 2, paragraph [0027]) which is not contained in the metal wiring materials of the at least two wiring layers.

In re claim 2, Iwasaki discloses the device of claim 1, wherein the metal wiring material comprises copper and the additive is Nickel.

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In re claim 3, Iwasaki discloses the device of claim 1, wherein the metal wiring material is AL and the additive is Cu or Si.

In re claim 5, Iwasaki (e.g., Fig. 1) discloses a semiconductor device, comprising:
at least two wiring layers (19, 15);

a via contact (17) formed between the at least two layers and made of a metal wiring material (aluminum plus copper) which is the same as that of the at least two wiring layers,

wherein metal wiring materials of the at least two wiring layers contain at least one additive, and a metal wiring material of the via contact contains at least two additives which include an additive which is the same (copper) as that contained in the metal wiring materials of the at least two wiring layers and the at least two wiring layers and an additive which is not contained in the metal wiring materials of the at least two wiring layers (see pp. 4, last 9 lines of paragraph [0037]).

In re claim 6, Iwasaki discloses the device of claim 5, wherein the metal wiring material comprises copper and the additive is Ni.

In re claim 11, Iwasaki discloses a semiconductor device, comprising:

a first metal wiring layer (15) made of a first wiring material, formed in a first wiring groove formed in a first insulating film (13) on a semiconductor substrate (1),

a second insulating film (18) on the first insulating film having the first wiring layer embedded therein,

a via contact (17) embedded in a via hole formed in the second insulating film, the via contact being made of the same wiring material as the first wiring material, which

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contain an additive (Ni or Si) which is not contained in the first wiring material of the first wiring layer,

a third insulating film (21) on the second insulating film having the via contact formed therein; and

a second metal wiring layer (19) embedded in a second wiring groove formed in the third insulating film, the second metal wiring layer being made of the same metal wiring material as the metal wiring material of the first metal wiring layer.

In re claim 12, Iwasaki discloses the device of claim 11, wherein the metal wiring material comprises copper and the additive is Ni.

Allowable Subject Matter

Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 7 – 10, 13 and 14 are allowed.

Response to Arguments

Applicant's arguments filed 08/17/06 have been fully considered but they are not persuasive.

In the Remarks, applicant does not directly address the merits of examiner's rejection. Instead, applicant re-interprets the prior art Iwasaki disclosure such that the

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layers (17 and 23) are designated the wiring layers instead of the examiner designated layers (15 and 19).

Examiner points out, for clarity in this instance, that the claims are being interpreted broadly, as in accordance with patent office procedure. To that end, the term, "wiring layers" is interpreted broadly. Unless applicant can show that "wiring" is afforded a special meaning in the specification or in the art, a via conductor will not be interpreted to have a different structure than a wiring, only the orthogonal orientation may be different.

Likewise, wiring layers may be said to comprise several layers in one. Therefore, in this instance, the outer layers (15 and 19) are as much a part of the wiring "layers" as is the inner conductors (17, 20 or 23) because they combine to form one layer.

Since Iwasaki is the main reference cited in the rejection, all other arguments stem from this argument and can be referenced hereto.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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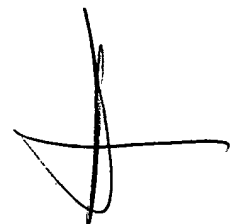
the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jesse A. Fenty whose telephone number is 571-272-1729. The examiner can normally be reached on 5/4-9 1st Fri. Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 571-272-1664. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jesse A. Fenty
Examiner
Art Unit 2815



JAF

KENNETH PARKER
SUPERVISORY PATENT EXAMINER